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Professor King contends that, what whatever office the filaments may subserve, the circumstances under which they occur are obviously incompatible with their supposed ciliary function; and in his opinion the evidence he has adduced shows that they are the ultimate subdivisions of cæcal appendages.

The perforations themselves, or rather their trunks, are generally simple; but in *Terebratulina caput-serpentis*, hitherto stated to have them of the usual form, they are singularly branched, or antler-shaped.

Although something has long been known of the branching character which distinguishes the canal system of *Crania anomala*, additional information on this point is given in the paper. Each trunk is at first divided somewhat as in *Terebratulina caput-serpentis;* but the branches, instead of ending each in a brush-like bundle, are individually terminated with a tuft of branchlets, sub-radially disposed. The former, as commonly seen, no doubt differs considerably from the latter: this is not so, however, when the respective bundles of various species are examined with powers magnifying from 150 to 300 diameters:—for example, in *Terebratula vitrea* the radiating lines or tubules, besides seemingly branching, shoot right across the comparatively wide interspaces, thereby causing the bundles to resemble long-spined *acari*, and to assume a feature which shows that there is nothing real or absolute in the difference above alluded to.

As the branchlet-tufts of *Crania anomala* are obviously the ultimate subdivisions of the perforations, the same conclusion may be predicated of the brush-like bundles belonging to the so-called "ciliated discoidal opercula" of other Palliobranchs: in short, according to Professor King, both are strictly homologous structures.

The paper notices some other points, which, along with those just stated, show that, although much has been published on the history of the Palliobranchiata, the subject has been far from exhausted.

XIV.—On Animal Heat. By W. H. O'Leary, Esq. [Abstract.]

[Read May 13, 1867.]

There are, broadly speaking, three great sources whence we derive materials which, by being oxidized, produce Animal Heat:—

First. Calorifacient foods, fats, &c., ingested by the intestinal canal;

Second. Disintegrated material derived from muscular and other tissues, as a result of activity;

Third. Reserved calorifacient materials stored up in the living system—namely adipose, &c.

The result of a number of experiments detailed in this paper (some of which I would wish to repeat in order to verify the results), tend to conclusively prove that the production of Animal Heat by oxidation of

the above materials, is accomplished in the circulation, and not in the tissues; that it is chiefly produced in the arterial system, and commences from the moment oxygen is received in the lungs, such action continuing throughout its whole extent; that such action takes place also in the veins, but to a much less degree; that the heat necessary to maintain muscular and other tissues at the normal temperature is derived from the arterial blood passing through them, and not from any oxidation taking place in their proper tissues; and that such temperature of individual parts bears a direct ratio to the diameter, or sum of the diameters, of such arteries.

The means by which the materials, derived from the three separate sources alluded to above gain access to the circulation, I shall consider under three separate heads:—

First. Ingested fatty foods are delivered into the circulation through the thoracic duct, before reaching the termination of which they have much diminished, the white nucleated cells having absorbed them to a corresponding extent, carrying them into the circulation in an altered condition.

Second. For the removal of the *debris* of the tissues—such as active muscular tissue, &c., into the circulation—I attribute to the white cells in the capillaries (whose office has been a rather fertile source of speculation), the fulfilment of that important function.

Third. Such calorifacient materials as exist free in the circulation, whether derived from the ingested food, or stored up adipose tissue—as when the system is labouring under a deficiency of food—the white nucleated cells absorb them into their interior for calorifying purposes.

In fulfilling this secretive function they are converted into the fully formed red cells of the blood, which thereby become the active calorifying agents of the system—the laboratories, in fact, within which oxidation is rapidly effected, producing as a result carbonic acid, water, and various eliminative compounds, and the evolution of Animal Heat.

A portion of the oxygen of the red cell substitutes the iron of the hematine; the iron thus set free acts as the exciting or catalytic cause of union between the remaining free oxygen and such elements of the blood cell as, by oxidation, produce Animal Heat.

XV.—On the Origin of the South European Plants found growing in the West and South of Ireland. By Professor Hennessy, F.R.S. [Abstract.]

[Read May 27, 1867.]

The author accounted for the circumstance that he brought this subject under the notice of the Academy by the fact, that although he had no pretensions as a botanist, his inquiries regarding the climatology of the